rule, the amount of anthophyllite and/or equivalent fiber (amosite, tremolite, or actinolite) should not be less than 30% by weight of the entire asbestos fiber therein and where the roll is to be exposed to temperatures of 1100° to 1600° F., this content should be at least 50% by weight of the asbestos fiber in the roll.

FIG. 3 shows a longitudinal section through a portion of a typical float glass producing apparatus. Here, a ribbon of glass **30** has been treated on a bath **32** of molten liquid, such as molten tin or tin alloy or other metal, contained within a tank **34**, and is lifted from the bath at the exit end of the tank by rolls **36** and **38** suitably journeled and driven by means, not shown. Carbon blocks **40** and **42** are spring pressed against the rolls **36** and **38**, respectively, so as to remove any materials which become deposited thereon. The blocks **40** and **42** are supported by a tank extension **44** into which removed deposited material will fall for removal.

The glass is conveyed into an annealing lehr **46** having a plurality of lehr rolls **48** therein. Means, not shown, such as a chain drive, are provided for driving the rolls. Each roll exerts a tractive force on the glass of sufficient magnitude to convey the glass through the lehr where its temperature is controlled to release permanent stress and strain in the glass.

A protective reducing atmosphere, such as nitrogen with perhaps a small percentage of hydrogen, is maintained over the bath **32** within the tank **34** in order to protect the bath from oxidization. Generally, the atmosphere contains 90 to 99.9 percent nitrogen and the remainder hydrogen. The atmosphere is maintained at a slight pressure above ambient pressure, as for example, 0.1 to 0.5 inch water, to substantially prevent the ingress of the ambient atmosphere within the tank **34**. To retain the atmosphere and to permit the passage of the glass ribbon from the tank **34**, the exit end of the tank is provided with a series of curtains or drapes **50** which trail on the glass ribbon. These drapes or curtains are usually made of an asbestos material which will not mar the glass and will withstand the temperature involved, which is approximately 1000° F. to 1200° F. at or adjacent the exit end of the tank **34**.

Additional drapes or curtains **52** of similar material are provided at the entrance end of the lehr **46**. In spite of the precautions taken, i.e., the use of multiple curtains and drapes, gases flow from the tank into the lehr, this condition being called "sting-out" or "carry-over." Previously these rolls have been constructed of stainless steel, so as to withstand the temperatures involved. However, the glass has the defects mentioned above.

When rolls constructed of material according to this invention are used, the amount of these defects is substantially reduced and often eliminated. The reason for this improvement is not understood. It may be due to a variety of reasons. For example, there appears to be less tendency for the components of the atmosphere (tin or tin oxide vapor or like low volatile component) to condense on the rolls. The roll surface may be better able to accommodate itself to the glass and/or to the contaminants in the roll, for example, it may be less easy to wet with tin or the vapors produced by a tin metal bath, or it may present a surface of low heat conductivity which tends to minimize condensation thereon. Whatever the reason, the glass has less defects when a portion or all of the rolls immediately adjacent the metal bath are composed as herein contemplated.

A typical lehr of the type described is approximately 360 feet in length and the rolls are 12 inches in diameter and are journeled on 12 to 18 inch centers, being more closely spaced at and adjacent the entrance end of the lehr where the glass is at an elevated temperature and deformable than at the exit end of the lehr where the glass is relatively cold. For example, glass enters the lehr at 1000° F. to 1200° F. or above and exits at 150° F. to 250° F.

In the practice of the float process, conditions of operation are, of course, different from that of sheet glass production and it is found that crocidolite asbestos may be used in lieu of anthophyllite or like fiber to form the rolls for such process, provided that the crocidolite concentration is preferably above 30 percent, i.e., 50 percent or more by weight of the asbestos fiber content thereof.

The first 10 or 15 rolls **48** may be comprised of anthophyllite (or equivalent) as described above. The latter rolls may be of ordinary asbestos or of metal. Rolls **36** and **38** also may advantageously comprise anthophyllite or the like, although satisfactory glass may be obtained even when these are of metal.

The exact number of rolls which should have the composition herein contemplated depends upon the conditions of operation. Ideally, all rolls which support and engage the glass ribbon in an area where there is potential exposure to an atmosphere created over the metal pool should be constructed according to this invention. However, even a single roll of this invention when substituted for a conventional roll in an area shortly after removal of the ribbon from the metal pool will normally improve the resulting quality of the glass obtained.

Although the present invention has been described with reference to the specific details of certain embodiments, it is not intended that such embodiments shall impose a limitation upon the scope of the invention except insofar as included in the accompanying claims.

What is claimed is:

1. A roll especially adapted for use at elevated temperatures having a material engaging surface containing at least 30 percent by weight of an asbestos fiber selected from the group consisting of anthophyllite asbestos, amosite asbestos, tremolite asbestos, actinolite asbestos and mixtures thereof.

2. A roll especially adapted for use at elevated temperatures having a material engaging surface containing not less than 50 percent by weight of an asbestos fiber selected from the group consisting of anthophyllite asbestos, amosite asbestos, tremolite asbestos, actionlite asbestos and mixtures thereof.

3. A traction roll for engaging glass having a glass engaging surface containing at least 30 percent by weight anthophyllite asbestos.

4. A traction roll for engaging glass which includes a support adapted to be mounted for rotation about its major axis and a covering on said support for engaging glass containing at least 50 percent by weight of an asbestos fiber selected from the group consisting of anthophyllite asbestos, amosite asbestos, tremolite asbestos, actinolite asbestos and mixtures thereof.

5. A traction roll as recited in claim **4** wherein said covering contains at least 80 percent by weight of said asbestos.

6. A traction roll for use in a sheet glass drawing apparatus and which contacts the surface of a ribbon of glass being drawn from a bath of molten glass which comprises a rotatable support, means to rotate said support, a plurality of discs receivable in side-by-side relation on said support and being held thereon to provide a glass engaging covering for said support, each of said discs containing at least 50 percent by weight of an asbestos fiber selected from the group consisting of anthophyllite asbestos, amosite asbestos, tremolite asbestos, actinolite asbestos and mixtures thereof.

7. In an apparatus for forming flat glass, means for forming a ribbon of flat glass by withdrawing glass from a molten bath thereof, and means for conveying said glass while in a deformable state from said first-named means, said conveying means including at least one glass-supporting roll having a glass-engaging surface containing at least thirty percent by weight of a material selected from the group consisting of an anthophyllite asbestos, amosite asbestos, tremolite asbestos, actinolite asbestos and mixtures thereof.